Biosecurity Fundamentals for Extension Personnel

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The prevention of livestock disease outbreaks is of concern to the entire agricultural community and especially to Extension personnel. The mass culling of United Kingdom livestock in early 2001 because of Foot and Mouth Disease (FMD) has heightened interest by demonstrating the vulnerability of a nation's animal resources. Extension personnel and other agricultural professionals need to be knowledgeable in livestock disease prevention procedures because they serve as an information resource for their community's producers, and they must be role models when duties may take them to livestock facilities.

Biosecurity- Its Meaning and Implications for Livestock Production Units

Biosecurity, in the context of livestock production, refers to those measures taken to keep disease agents out of populations, herds, or groups of animals where they do not already exist. Biosecurity measures can be implemented on national, state, and herd levels. While there is increased awareness of FMD as a national biosecurity issue, the USDA continues to be vigilant as it attempts to keep many foreign animal diseases out of our livestock population. In addition to national concerns, individual states take measures to prevent the entry/reintroduction of livestock diseases they have been able to prevent/eliminate from herds in their state. They do this by setting requirements for arriving animals. Examples of diseases that are of particular concern to states include brucellosis, tuberculosis, and pseudorabies. Herd-level biosecurity usually rests with the herd owner or management team; they try to exclude any disease which is not already present in the herd and to limit the spread of existing diseases within the herd. Examples might include mastitis caused by Streptococcus agalactiae, bovine virus diarrhea, ovine progressive pneumonia, and swine dysentery. To be valid, a biosecurity plan should at least address 1) how a group of "new" animals will be isolated away from other groups, 2) how traffic (movement of people, animals, and equipment) will be regulated, and 3) how cleaning and disinfection procedures will be designed to reduce pathogen levels.

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Every flock or herd manager who hopes to raise livestock profitably must address issues of herd health maintenance. It is well documented that diseased animals are not as profitable, thus it is in the producer's best interest to adopt a biosecurity plan designed to prevent and control disease.

Biosecurity measures can be categorized as either **external measures**- those measures taken to prevent the entry of new diseases into a herd or production group or **internal measures**- those measures taken to

prevent the spread of a disease already in the herd to other uninfected groups or subpopulations within the herd. In general, diseases within a herd spread from older animals to younger animals.

This fact sheet will address **primarily external biosecurity measures** for livestock.

Comprehensive biosecurity programs have already been adopted by many poultry and pork producers as they have recognized the need to safeguard the health of their flocks and herds. With the relatively large number of birds or pigs housed in a modern production unit, disease prevention, rather than disease treatment, is easily the better alternative. Basic issues to consider in a biosecurity program include isolating new animals, controlling the movement on the farm, and sanitation.

Efforts should be prioritized to address those factors posing the greatest risk for disease introduction. Regardless of the livestock species, the most common way contagious diseases are introduced is by adding animals to the herd, typically replacement breeding stock. Merely excluding obviously sick animals is not sufficient to prevent disease introduction; new stock may be incubating diseases to which they were recently exposed, or they may be carriers and shedders of disease organisms. In these cases, it is likely that they will have no apparent signs of disease upon arrival at their new home.

To reduce the risk of introducing diseases with additions to the herd, the following general guidelines should be adopted:

- The health status of the source herd should be reviewed. The number of source herds should be minimized; single-source animals are preferred over commingled animals. If there are diseases present in the herd-of-origin that are not in the recipient group, the acceptability of animals from this source should be questioned. Procuring animals from a source that has a lot of exposure because it participates in many exhibitions or it frequently purchases animals increases the risk compared to using a closed herd as a source. Animals obtained through sales or auctions, where animals from many sources are commingled, generally have a greater risk of disease than those purchased directly from the herd of origin.

- All new or returning animals should be isolated from the herd for at least two weeks and preferably four weeks. (Many swine herds now require a strict 30-day isolation period followed by a 30-day acclimation period before new animals are introduced to the herd.)

  a) The isolation facility should be at least several hundred yards from the rest of the herd and positioned so that surface drainage and prevailing winds do not carry contamination to the herd. As a rule of thumb, the isolation facility should be far enough away so that it is not readily and easily accessible to personnel as they perform their other regular farm duties.

  b) The isolation facility should be managed all-in/all-out. No animal should be moved from the isolation facility to the recipient herd until the most recent addition has completed the testing protocol and isolation period.

  c) Animals should be carefully observed at least daily during the isolation period. Those showing signs of illness should be penned separately and promptly examined by a veterinarian.

  d) Tests for diseases of specific interest can be accomplished before the isolation period ends. Acceptable test results should be received before animals are released from isolation.

  e) Preventive treatments such as deworming and vaccination can be started in preparation for moving to the herd.

  f) Outerwear (boots, coveralls, coats, gloves, hats) worn while tending these animals should be restricted to the isolation facility.

  g) Duties should be sequenced so the person caring for the isolation animals does not come into contact with other animals later that day. If possible, the person taking care of the isolation animals should have no other animal-contact duties.

  h) Equipment such as feed containers, hurdles, snares, halters, blankets, shovels, forks, scrapers, etc., used in the isolation facility should not be used in other units.

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Assessing the Disease Risk Posed by Visitors

Although diseases are most commonly introduced into a herd by the addition of animals, there is a risk of disease introduction by people traveling between groups of animals. This risk may vary considerably and is influenced by the specific disease agent, the extent of the animal contact, the time elapsed since the last animal contact, and the preventive measures used.

Low-risk visitors include those from urban areas or those who have had no livestock contact. Although these visitors present very little risk of introducing disease to the farm, some precautions might include:

- Asking visitors to wear freshly laundered outerwear and clean footwear. You may wish to provide them with disposable plastic boots (or clean rubber boots which remain at the farm) and coveralls as an added precaution. This not only reduces the disease risk for your animals but also helps prevent guests from contaminating their clothing with germs from your farm.
- Not relying heavily on disinfectant-filled boot baths. Research has shown the use of boot baths to be an unreliable method of routine disinfection, unless boots are thoroughly scrubbed before immersion and adequate contact time in the disinfectant is permitted usually at least five-minutes contact time is required.
- Not allowing visitors to enter pens, walk through feed alleys, or touch animals unless necessary.
- Not allowing visitors to bring food articles with them on the farm.
- Providing a plastic bag for collection of disposable boots and asking guests to wash their hands (and boots, if worn) before leaving.

Moderate risk visitors include those people who routinely visit farms, but who have little or no actual contact with animals. Salesmen, feed and fuel delivery drivers, and maintenance workers are examples of this group. They should be expected to observe the same precautions as stated earlier and in addition:

- They should wear clean coveralls and boots if there is any contact with feed, animals, soil, or manure.
- Any sampling equipment should be properly cleaned and disinfected between uses.
- Dirty boots should be cleaned and disinfected, and coveralls should be removed and placed in a clean plastic bag or container before re-entering the vehicle.

High-risk visitors are those people who come into direct contact with livestock in their work and would include inseminators, processing crews, veterinarians, livestock haulers, and livestock-owning neighbors. These people typically have direct contact with animals and their bodily discharges. In addition to the precautions listed earlier, other recommendations might include:

- Vehicles should be clean and free of visible manure on the tires and wheel wells and should be kept away from animal areas and driveways used by the farm's own vehicles. In an emergency disease situation, such as the presence of FMD in the United States, restrictions on access to the farm should be in place and disinfection of vehicles should be considered even if not mandated. In the event FMD occurs in Ohio, these procedures will be mandated. Vehicle interiors should be clean and easily cleanable. Livestock trucks and trailers should be clean and dry, and preferably disinfected, before arrival on the farm.
- Visitors should arrive with clean clothing, boots, and equipment. Equipment and instruments that have direct animal contact (dehorners, castration equipment, halters, etc.) should be cleaned and disinfected (or sterilized) after use and maintained in such a way that they do not become re-contaminated.
- Disposable sleeves/gloves, other disposable clothing, or clothing that can be disinfected should be

worn whenever there is the possibility of direct contact with bodily discharges or animal tissues.

- Before leaving the farm, dirty equipment and footwear must be cleaned and disinfected with an appropriate chemical agent. Soiled coveralls should be removed before re-entering the vehicle. Potentially contaminated hands and forearms should be washed with soap and water.

- Farm employees who have livestock at their own home should be required to report to work personally clean and in clean clothes that have not been exposed to their own livestock. They could provide their own clean coveralls and disinfected boots, or it may be easier to supply employees with outerwear and boots that are left at the farm when the employee returns home. As a condition of employment, some employers now prohibit their workers from caring for livestock outside the employer's herd.

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Suggested Biosecurity Guidelines for Extension Personnel Visiting Farms

- When planning a visit to a livestock facility, Extension personnel should contact the herd manager to discuss the farm's requirements for biosecurity in terms of clothing, animal contact, showering, etc. Even if not required by the farm, Extension personnel should, at a minimum, set the example by using measures that would seem prudent for a well-managed farm.

- Expect farm managers to question potential visitors about recent contact with animals in other herds or visits to foreign countries. In the course of the interview, the manager can decide whether the person represents a low, medium, or high-risk visitor and then take appropriate measures.

- Avoid unnecessary animal contact when visiting livestock facilities. For observing outside buildings and outside fences, new disposable plastic boots or protective footwear supplied by the farm should be used.

- Extension personnel should be dressed in clean outerwear (not worn on any other farm since being cleaned) if it is necessary for him/her to be in buildings, alleyways, lots, pens, or pastures normally accessible to the herd. Disposable coveralls and disposable plastic boots are recommended; however, clean laundered coveralls and clean disinfected rubber boots may be acceptable. If disposable outerwear is impractical, the farm being visited should supply the reusable coveralls and boots to reduce the chance of additional pathogens being introduced. Because of the difficulty in satisfactorily disinfecting reusable boots, plastic disposable boots (6-mil thickness recommended), are suggested for most cases. However, disposable plastic boots are more subject to leaks when worn for an extended time or on abrasive surfaces, and they provide very poor traction for walking in snow or on smooth wet floors. The biosecurity risk must be weighed against the safety risk associated with their use.

- If Extension personnel supplying the outerwear, coveralls should be clean or new and should be protected from cross-contamination with dirty items. Plastic storage containers with sealing lids can be used for storing and transporting the new and/or clean coveralls and disposable boots. Clean rubber boots can be sealed in a plastic bag until needed. To minimize the difficulty in cleaning rubber boots, the boots should be free of creases, folds, and buckles; the tread pattern on the bottom should not be aggressive so that debris cannot be removed easily. Head covers and dust masks can provide added protection. In cases where clean rubber (reusable) boots are used, they should be dipped or soaked in disinfectant solution as part of the donning of the coveralls and boots just before entering animal facilities.

- When actual contact with animals is a possibility, no more than one farm or herd should be visited on the same day, if possible. (Note: For admission to many well-managed confinement swine and poultry units, the visitor must not have been on another farm in the past 2448 hours. Even then, they must shower-in and wear only farm-supplied clothes.)

- When leaving the farm, protective outer-clothing worn on a farm should be removed before entering the vehicle and left on that farm if at all possible. Reusable coveralls should be placed in a plastic bag and tied-off until they can be laundered. Reusable boots should be scrubbed free of debris with water, soaked in disinfectant solution, and then placed in a plastic bag or other container for transport allowing the disinfectant to dry on them.

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Biosecurity Issues to Consider When Planning a Farm Tour Where Livestock Are Present

- Discuss with herd owners/managers their biosecurity expectations. This may vary greatly from farm to farm. In general, breeding herds have more concern about biosecurity than feedlots.
- Designate a person to serve as biosecurity advisor; this person can help formulate policy and answer questions. This likely will be the herd veterinarian.
- Publish the biosecurity standards for the event in the tour announcements and promotional materials. If registration or sign-in takes place at the farm on the day of the tour, the biosecurity standards can be reinforced at that point. Consider including information on:

  a) **Dress standards**—Clean outerwear not worn on another farm since cleaning.

  b) **Boots**—Disposable plastic boots are preferred and will be supplied. Reusable rubber boots will be examined for cleanliness and suitability, and approved by the biosecurity advisor or designee. Anyone wearing reusable boots will disinfect them before entering the farm.

  c) **Foreign travelers**—Advising persons who have returned from traveling outside North America in the past seven days to notify the herd manager or biosecurity advisor about participating in the tour. The biosecurity advisor can evaluate the risk and render a decision about the person's participation in the tour.

  d) **Food products**—Foods of animal origin should not be brought onto the farm unless approved by the herd manager/biosecurity advisor.

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- Establish an entry point from the parking area to the animal facilities through which all visitors will pass. A sign may indicate boots are needed beyond this point.
- Disposable boots should be the standard if the tour is to include walking in livestock buildings and in pastures or forages that will be harvested for animal consumption within two weeks. Admittedly, reusable rubber boots are more durable and give better traction in many conditions. If disposable plastic boots are deemed unsuitable for the tour and reusable rubber boots are used, a boot washing station should be set up. The station should have provisions for scrubbing and rinsing all visible soil off the boots. The boots are then immersed in a clean disinfectant solution for five minutes before entering the premise.
- Minimize actual contact with animals, animal waste, and discharges. Keep visitors back 10 feet or more where possible.
- Provisions should be made for cleansing hands and exposed skin if actual animal contact is anticipated. Consider providing alcohol-based hand rinses and cleansing gels where soap and water are not readily available. Hand washing is especially important if children, the elderly, or immunosuppressed individuals will be participating in the tour.
- If food and refreshments are to be available at the tour site, they should be prepared, served, and consumed away from the actual livestock facilities to minimize the possibility of microbial agents of animal origin contaminating the food. While hand washing before eating is always recommended, hand washing facilities for patrons should be considered essential if they will be actually touching the food they are consuming finger-foods such as chips, cookies, ice cream cones, sandwiches, etc. as compared to beverages in a bottle/can/cup or food eaten with a spoon/fork. As an alternative to washing hands with running water and soap, consider making a cleansing gel or waterless alcohol-based hand rinse and paper towels available near the food concession. These hand rinses are widely available over-the-counter.

- Provide a receptacle for discarded plastic boots convenient to the point where visitors will be departing from the animal area. Ideally, the used boots (and disposable coveralls) can be bagged in plastic trash bags and then placed in a dumpster for removal.

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Guidelines for Visiting Multiple Livestock Projects

It is sometimes necessary to examine and tag project animals at several different locations on the same day (such as a 4-H advisor observing club members' livestock projects). When facing such a task, the following items should be considered in the interest of good biosecurity.

- Schedule as few farms as possible having the same species of animals on any given day. It would be better to visit one hog project, one lamb project, and one steer project in a day rather than three lamb projects.
- Give farms with full-time livestock production units the opportunity to be visited first on a given day. The impact of a biosecurity breach is much less for locations where there is only a market project animal(s).
- Keep the number of people in the traveling party to the minimum needed to accomplish the job. For biosecurity, it would be better to have multiple small groups visiting separate farms rather than one larger group that has to visit all the farms.
- Use disposable plastic boots if the visit requires entering animal facilities. If animal contact is possible, coveralls should be worn. Alternative ways to handle coveralls, in descending order of preference:

  a) New disposable coveralls for each farm.

  b) Coveralls to be worn by visitors are supplied by each farm.

  c) Visitor supplies clean reusable coveralls for each stop.

  - Request that each farm supply as much equipment as possible for use with their own animals (nose-leads, snares, tattoo sets, tagging pliers, buckets). Clean and sanitize all transported equipment before and after use at each location.
  - Before and after handling animals at each location, cleanse hands and exposed skin subject to animal contact. Consider wearing disposable examination gloves whenever possible.
  - Leave used disposable items (boots, coveralls, gloves) at the farm where they are used. All the items can be sealed in a small trash bag for convenient disposal by the owner. If clean and contaminated items will be transported in the vehicle of the visitor, separate containers for each should be used to prevent cross-contamination.

The information in this fact sheet is intended to raise issues related to biosecurity that merit consideration if animals are to be moved between established groups, or if people move between groups of animals. Each recommendation should be evaluated on its own merit for the specific situation. An animal health specialist should be consulted in formulating the good management practices to prevent and control disease in livestock populations.

Reference:

Extension Factsheet: Veterinary Preventive Medicine, 1900 Coffey Road, Columbus, OH 43210

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